

Express Mail No.: EV889151902US
International Application No.: PCT/US2003/036427
International Filing Date: November 12, 2003
Preliminary Amendment Accompanying
Substitute Specification

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method for filtering liquid utilizing a proportioning, regenerative rotary pump configuration, comprising:
introducing feed liquid into a pump;
pressurizing the feed liquid in the pump;
feeding the pressurized liquid from the pump to a reverse osmosis filter;
dividing the liquid in the filter into product liquid and waste liquid;
feeding the waste liquid to a motor to drive the motor; and
mechanically coupling the motor to the pump to recover energy from the waste liquid and establish a ratio of feed liquid to product liquid.

2. (Previously Presented) A liquid filtration system, comprising:
a pump configured to receive feed water and to pressurize the feed water at an outlet therefrom;
a filter coupled to the outlet of the pump and configured to receive the pressurized feed water and to divide the pressurized feed water into waste water and purified product water;
a motor having an input coupled to the filter to receive the waste water and configured to be driven by the waste water; and
a mechanical coupling configured to couple the output of the motor to an input of the pump to recover a portion of the energy used to pressurize the feed water and to establish a ratio of the feed water to the product water.

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3. (New) The method of claim 1, comprising providing a motor having a displacement and a pump having a displacement, wherein the ratio of the motor displacement to the pump displacement is 90%.

4. (New) The method of claim 1, wherein the motor and the pump each comprise a rotary vane type.

5. (New) The method of claim 1, wherein the ratio of product liquid to feed liquid is 90%.

6. (New) The method of claim 1, wherein mechanically coupling comprises directly coupling the motor to the pump with a positive mechanical coupling.

7. (New) The method of claim 1, wherein mechanically coupling comprises a variable coupling to enable varying of the pump-to-motor ratio.

8. (New) The method of claim 1, wherein mechanically coupling comprises a non-positive mechanical coupling.

9. (New) The method of claim 1, comprising coupling combination pump-and-motor units in series to provide a multiple stage system.

10. (New) The method of claim 9, comprising coupling the product liquid outputs from each pump-and-motor unit to a common output line.

11. (New) The method of claim 10, comprising coupling a waste water output from a reverse osmosis filter in each unit to an input of a succeeding unit.

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12. (New) The method of claim 1, wherein the motor and the pump each have a displacement, and the ratio of the motor displacement to the pump displacement is 90%.

13. (New) The method of claim 2, wherein the motor and pump each comprise a rotary vane type.

14. (New) The method of claim 2, wherein the ratio of product liquid to feed liquid is 90%.

15. (New) The system of claim 2, wherein the mechanical coupling comprises a direct coupling.

16. (New) The system of claim 2, wherein the mechanical coupling comprises a variable coupling to enable varying of the pump-to-motor ratio.

17. (New) The system of claim 2, wherein the mechanical coupling comprises a non-positive mechanical coupling.

18. (New) The system of claim 2, wherein the mechanical coupling comprises a positive mechanical coupling.

19. (New) The system of claim 2, comprising multiple pump-and-motor units coupled together in series.

20. (New) The system of claim 19, wherein the product liquid output from each pump-and-motor unit is coupled to a common output, and the waste water output from each pump-and-motor unit is coupled to an input of a succeeding pump-and-motor unit.